CLAIMS

1. A vent assembly for a high pressure die casting system comprising a pair of opposed chill blocks having corresponding chill surfaces defining a continuous vent chamber therebetween, each of the chill surfaces comprising a plurality of adjoining chill faces extending the length of the vent chamber, each chill face having a corresponding chill face on the paired chill block defining a section of the vent chamber, the plane of each chill face being oriented at an angle to an adjoining chill face on the respective chill block.

2. The vent assembly of claim 1, wherein at least one of the chill blocks comprises a plurality of block modules, each block module fitting with an adjoining module and combining with the paired chill block to define a section of the vent chamber, the plurality of adjoining modules forming a continuous vent chamber with the paired chill block.

3. The vent assembly of claim 1, wherein both of the paired chill blocks comprise a plurality of block modules, the modules of each block fitting with an adjoining module and combining with modules of the paired chill block to define a section of the vent chamber, the plurality of adjoining modules of each chill block defining a continuous vent chamber between the pair of chill blocks.

4. The vent assembly of claim 1, wherein the chill faces of the chill blocks have a corrugated surface.

5. The venting assembly of claim 1, wherein the width of the vent chamber is constant along the length thereof.

6. The vent assembly of claim 1, wherein the vent chamber is provided with an inlet for connection to the outlet of a die casting mould, the inlet having a runner comprising a conduit connecting the base of each section of the continuous vent chamber.

7. The vent assembly of claim 1, wherein the vent chamber is provided with a vacuum port and is connectable to a vacuum source.

8. The venting assembly of claim 7, wherein the chill blocks are able to seal against each other so that the vent chamber and therefore the die cavity, is able to retain a high level of vacuum during the cavity filling of molten material.

9. The venting assembly of claim 1, wherein the chill blocks are provided with holes for the passage of fluid to control the chill blocks' temperature, the holes being connectable to a source of temperature control fluid.

10. The venting assembly of claim 1, wherein a housing is provided for the chill blocks, the housing having a vacuum port connectable to a source of a vacuum and communicating with the vent chamber between the chill blocks.

11. The venting assembly of claim 10, wherein the housing is provided in two parts, each part receiving a respective chill block.

12. The venting assembly of claim 11, wherein a seal is provided between the two parts of the housing to seal the chill blocks within the housing.

13. The vent assembly of claim 1, wherein the chill blocks are provided with a pin ejector for assisting with the removal of solidified metal from the vent passage.

14. The vent assembly of claim 13, wherein the pin ejector comprises a depression port and a pin extending the length of the depression port, the pin being biased to extend beyond the interior surface of the vent chamber and being able to be depressed flush with the surface of the vent chamber.

15. The venting assembly of claim 1, wherein the vent chamber is further provided with a sealable secondary port, the sealable secondary port being connectable to a source of compressed gas.

16. An apparatus for forming a solid product from a molten material comprising a vent assembly of claim 1.

17. An apparatus for forming a solid product from a molten material, the apparatus having a vent assembly, the vent assembly comprising two block

structures, a first of said block structures having at least one extending member which engages with at least one corresponding recess in the second block structure, the engaged block structures forming a continuous vent chamber defined between the faces of the extending member and the faces of the corresponding recess of the block structures.

18. The apparatus of claim 17, wherein at least one extending member of the vent assembly comprises a pair of wedge main faces aligned with respect to each other at a tapered angle to form a thin end and a thick end of said wedge shaped member, a wedge end face extending between the wedge main faces at said thin end of the wedge shaped member.

19. The apparatus of claim 18, wherein at least one corresponding recess comprises a wedge shaped recess having a pair of recess main faces aligned with respect to each other at said taper angle to form a thin end and a thick end of said recess, a recess end face extending between the recess main faces at said thin end of the recess.

20. The apparatus of claim 18, wherein the block structures engage such that the wedge main face opposes corresponding recess main faces and the wedge end face opposes the recess end face to define a continuous vent chamber therebetween.

21. The apparatus of claim 16, wherein the vent assembly is connectable to a source of vacuum.

22. The apparatus of claim 16, wherein the surface of the faces of the extending member and the recess are corrugated.

23. The apparatus of claim 16, wherein the vent assembly includes a temperature control fluid gallery internal to each of the block structures.

24. The apparatus of claim 1 wherein the chill faces are provided with a surface coating to improve the performance of the surface.

25. A method of casting or moulding a material in a cavity of a die, comprising the steps of:

connecting the cavity to a vent assembly by way of a first conduit, connecting a vacuum source to the vent assembly by way of a second conduit;

evacuating gas from the cavity through the first conduit vent assembly and second conduit to the vacuum source;

injecting a quantity of melt of said material into the cavity to fill the cavity, the quantity of metal at least being sufficient to fill the cavity;

permitting a portion of the quantity of the material to flow from the cavity from the first conduit into the vent assembly to solidify the material therein such that the solidified material seals the vent assembly and/or first conduit;

opening the die and vent assembly by separating portions of the die and the vent assembly in a first direction;

ejecting the solidified material from the cavity and the vent assembly,

wherein the vent assembly comprises two block structures, the first of the block structures having at least one extending member defining chill faces which engage with a corresponding recess on the second block structure, the engaged block structures forming a vent chamber within the vent assembly.